I.     Interview Summary

At the Examiner's request, on November 30, 2011, the Examiner and the undersigned spoke by telephone, during which the Examiner proposed some general ideas for amendments that she said would place the application into condition for allowance.  The undersigned disagreed that an amendment was necessary, but agreed to consider the Examiner's proposal, and realized later in reviewing the claims that an antecedent basis issue had been created by the prior amendment.  On December 1, 2011, the undersigned transmitted by email a draft amendment for the Examiner's consideration, which did not adopt the Examiner's suggestions but which corrected the antecedent basis issue, including proposing an Amendment to the Claims that was much like that contained herein.  The antecedent basis issue appears to be recognized in the "Examiner's Notes" portion of the Final Rejection, on pages 14-15, which states:

> It seems there may be a 112, 2nd paragraph lack of antecedent basis issue in claim 1. The claim states "associating said packet with said control information ... ". However, it is unclear as to what "control information" the packet is being associated. Clarification may be necessary.

The Amendment to the Claims contained herein corrects such antecedent basis issues in claims 1 and 21.


II.     35 USC § 103

A.     Claims 1, 4, 21, 23, 28-31 and 33

Claims 1, 4, 21, 23, 28-31 and 33 stand rejected under 35 U.S.C. §103(a) as allegedly being obvious over U.S. Patent No. 6,427,169 to Elzur in view of U.S. Patent No. 6,233,543 to Butts et al. ("Butts").

1.     Claim 1

Regarding claim 1, the Final Rejection states:

> As per claim 1, Elzur discloses an interface device for a computer, the interface device comprising:

- a hardware configured to process a transport layer header of a packet received via a first network port (column 2, lines 1-2, 43-47, 55-58, 64-67, column 3, lines 1-4, column 4, lines 40-45);
- A mechanism for associating said packet with said control information (column 4, lines 20-30, column 5, lines 5-10).
- to send data from said packet via a second network port to a storage unit, thereby avoiding the computer (column 5, lines 59-65, column 6, lines 7-10, 42-52).

Elzur does not explicitly disclose:

- A memory storing a TCP connection established by the computer and handled by said device.

However, the use and advantages of storing a TCP connection is well-known to one of ordinary skill in the art as evidenced by Butts (column 3, lines 51-60).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Butts's memory storing a TCP connection in Elzur's device in order to read and write information from/to the socket.

Applicants respectfully disagree with this rejection, as discussed below, but in an effort to expedite the lengthy prosecution of this application have amended claim 1 to recite that the "network ports" are "physical" network ports. Support for this amendment can be found, for example, on page 17, lines 10-11 and page 18, lines 1-2 and 19-20 of the specification. Applicants also have amended claim 1 by replacing the term "control information" with the term "TCP connection."

The Final Rejection does not state what in Elzur allegedly discloses the items in the recitation in claim 1 of "hardware configured to process a transport layer header of a packet received via a first network port," aside from listing a few column and line numbers of Elzur, but the Examiner indicated over the phone on November 30, 2011, that she was interpreting the TCP port numbers of Elzer as disclosing the recitation of "a first network port." For instance, Elzur mentions, in a section cited by the Final Rejection, "a TCP protocol header 22a may include a field 30 that indicates the TCP source port address and a field 32 that indicates the TCP destination port address." Col. 1, line 66 – col. 2, line 2.

While the Patent Office is entitled to interpret claims as broadly as is reasonable in light of the specification, applicants respectfully assert that the Examiner's interpretation of the recitation in claim 1 of "hardware configured to process a transport

layer header of a packet received via a first network port" is not reasonable. As stated in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316, 75 USPQ2d 1321, 1329 (Fed. Cir. 2005):

> The Patent and Trademark Office ("PTO") determines the scope of claims in patent applications not solely on the basis of the claim language, but upon giving claims their broadest reasonable construction "in light of the specification as it would be interpreted by one of ordinary skill in the art." *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004).

The specification mentions network ports in several locations, (e.g., page 7, lines 6-9; page 16, lines 3-6 and 14-16; page 17, lines 10-11; page 18, lines 19-21). For instance, page 16, lines 3-6 states "First INIC 22 may, as mentioned above, actually have several network ports for connection to several networks, and second INIC 303 may also be connected to more than one network 305, but for clarity only a single network connection is shown in this figure for each INIC."

As further noted in *Phillips,* 415 F.3d at 1314, "the claims themselves provide substantial guidance as to the meaning of particular claim terms." A person of ordinary skill would know, however, that neither the "TCP source port address" nor "TCP destination port address" could be "a first network port" that "a packet (is) received via," because both the TCP source and destination ports are simply numbers. Further, the quoted section of Elzur shows that the TCP source and destination ports are part of the TCP header of the packet. For the Final Rejection to allege that either the "TCP source port address" or "TCP destination port address" could be "a first network port" that "a packet (is) received via" would be tantamount to alleging that Elzur discloses "hardware configured to process a transport layer header of a packet received via a number contained in the transport layer header." Applicants respectfully assert that such an interpretation is not reasonable.

*Phillips* also notes: "Other claims of the patent in question, both asserted and unasserted, can also be valuable sources of enlightenment as to the meaning of a claim term." *Id.* In this regard, claim 3 recites "The interface device of claim 1, wherein said first network port is connected to a first network and said second network port is connected to a second network." A person of ordinary skill in the art would not reasonably believe that a TCP port number would be connected to a network.

In an effort to expedite the prosecution of this application, however, applicants have amended claim 1 to recite that the "network ports" are "physical" network ports, while reserving the right to file a broader claim in a continuation application.

Applicants also respectfully disagree that Elzur discloses "to send data from said packet via a second network port to a storage unit, thereby avoiding the computer (column 5, lines 59-65, column 6, lines 7-10, 42-52)." Once again, the Final Rejection does not state what in Elzur allegedly maps to the items in that recitation in claim 1, such as a "second network port," a "storage unit" and a "computer," aside from listing a few column and line numbers of Elzur. Once again, items such as a "second network port," a "storage unit" and a "computer" are clearly absent from the cited sections of Elzur. For example, there is nothing in the cited sections of Elzur that discloses a "computer" that is "avoid(ed)." Elzur does mention, in one of those sections cited by the Final Rejection, "The TCP (or other layer 4 protocol, e.g., RTP) destination port uniquely identifies the application that is to receive the data." Col. 6, lines 49-52. As discussed above, however, the (destination port) number that identifies the application is not a "second network port" as the term is used in claim 1.

Moreover, although the claims are to be given their broadest reasonable construction in light of the specification, nothing in Elzur discloses "to send data from said packet via a second network port to a storage unit, thereby avoiding the computer," as recited in claim 1. For at least these additional reasons, claim 1 is nonobvious over Elzur in view of Butts.

Applicants acknowledge the Final Rejection admission that Elzur does not disclose a memory storing a TCP connection established by the computer and handled by said device. Applicants disagree, however, with the Final Rejection assertion that "one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Butts's memory storing a TCP connection in Elzur's device in order to read and write information from/to the socket." Applicants note, moreover, that even if that statement were true, it still does not teach or suggest the actual recitation in claim 1 that the "TCP connection (is) established by the computer and handled by said device." Stated differently, the Final Rejection does not even allege a *prima facie* case of obviousness of claim 1.

It is not surprising that the Final Rejection does not provide a *prima facie* case of obviousness of claim 1, because neither Elzur nor Butts discloses a device including "a memory adapted to store a TCP connection established by the computer and handled by said device," and so it is difficult to imagine how Elzur in view of Butts would teach this recitation. Also absent from Butts is disclosure that a TCP connection that is stored on the device was established by the computer, which is yet another reason why claim 1 is nonobvious over Elzur in view of Butts.

For all the above reasons, claim 1 is nonobvious over Elzur in view of Butts.

### 2. Claim 4

Regarding claim 4, the Final Rejection states:

> As per claim 4, Elzur discloses the interface device of claim 1, further comprising a Fibre Channel controller connectable to the storage unit (column 3, lines 46-60).

Applicants respectfully disagree. A "Fibre Channel controller" is not disclosed in column 3, lines 46-60 of Elzur. A "Fibre Channel controller" is also not disclosed elsewhere in that patent, and is not disclosed in Butts. Moreover, as noted above, a "storage unit" is not disclosed in Elzur, and so "a Fibre Channel controller connectable to the storage unit" is also not disclosed in Elzur.

For at least these reasons, the Final Rejection does not provide a *prima facie* case of obviousness of claim 4.

### 3. Claim 21

Regarding claim 21, the Final Rejection states:

> As per claim 21, Elzur discloses an interface device for a computer, the interface device comprising:
> - A receive mechanism that processes a Transmission Control Protocol (TCP) header of a network packet (column 2, lines 43-47, 55-58, 64-67, column 3, lines 1-4);
> - A processing mechanism that associates said packet with said information (column 4, lines 20-30, column 5, lines 5-10);
> - to send data from said packet via a network port to a storage unit, thereby avoiding the computer (column 5, lines 59-65, column 6, lines 7-10, 42-52).
> Elzur does not explicitly disclose:

- A memory storing a TCP connection established by the computer and handled by said device.

However, the use and advantages of storing a TCP connection is well-known to one of ordinary skill in the art as evidenced by Butts (column 3, lines 51-60).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Butts's memory storing a TCP connection in Elzur's device in order to read and write information from/to the socket.

Applicants respectfully disagree. As with the rejection of claim 1, the Final Rejection does not state what in Elzur allegedly discloses the various items recited in claim 21, aside from listing a few column and line numbers of Elzur. As with the rejection of claim 1, this appears to be because Elzur does not map to the items recited in claim 21.

Moreover, the Final Rejection does not even allege a *prima facie* case of obviousness of claim 21, again like the rejection of claim 1. That is, claim 21 recites in part "a memory storing an established TCP connection that can migrate to and from the computer." The Final Rejection does not even assert that Elzur or Butts discloses this recitation, showing that claim 21 is nonobvious over Elzur in view of Butts.

It is not surprising that the Final Rejection does not provide a *prima facie* case of obviousness of claim 21, because neither Elzur nor Butts discloses a device including "a memory storing an established TCP connection that can migrate to and from the computer," and so it is difficult to imagine how Elzur in view of Butts would teach this recitation.

For all the above reasons, claim 21 is nonobvious over Elzur in view of Butts.

### 4. Claim 28

Regarding claim 28, the Final Rejection states:

As per claim 28, Elzur discloses a method for operating an interface device for a computer, the interface device connectable to a network and a storage unit, the method comprising:
- Receiving, by the interface device from the network, a packet containing data and a Transmission Control Protocol (TCP) header (column 2, lines 43-47, 55-58, 64-67, column 3, lines 1-4);
- Processing, by the interface device, the TCP header (column 2, lines 43-47, 55-58, 64-67, column 3, lines 1-4);

- Associating, by the interface device, the packet with the TCP connection (column 4, lines 20-30, column 5, lines 5-10);
- Selecting, by the interface device, whether to process the packet by the computer or to send the data from the packet to the storage unit, thereby avoiding the computer (column 5, lines 59-65, column 6, lines 7-10, 42-52).

Elzur does not explicitly disclose:
- A memory storing a TCP connection established by the computer and handled by said device.

However, the use and advantages of storing a TCP connection is well-known to one of ordinary skill in the art as evidenced by Butts (column 3, lines 51-60).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Butts's memory storing a TCP connection in Elzur's device in order to read and write information from/to the socket.

Applicants respectfully disagree. As with the rejection of claims 1 and 21, the Final Rejection does not state what in Elzur allegedly discloses the various items recited in claim 28, aside from listing a few column and line numbers of Elzur. As with the rejection of claim 1, this appears to be because Elzur does not map to the items recited in claim 21. For example, the Final Rejection cites "column 5, lines 59-65, column 6, lines 7-10, 42-52 " as disclosing "avoiding the computer," but there is no disclosure in those sections of that recitation. However, because the Final Rejection does not state what it considers to be the "computer" (or any of the other items of the claim), it is impossible to even understand what the Final Rejection alleges.

Moreover, the Final Rejection does not even allege a *prima facie* case of obviousness of claim 28, again like the rejections of claims 1 and 21. That is, claim 28 recites in part "storing, on the interface device, a TCP connection that can migrate to and from the computer." The Final Rejection does not even assert that Elzur or Butts discloses this recitation, showing that claim 28 is nonobvious over Elzur in view of Butts.

It is not surprising that the Final Rejection does not provide a *prima facie* case of obviousness of claim 28, because neither Elzur nor Butts discloses "storing, on the interface device, a TCP connection that can migrate to and from the computer," and so it is difficult to imagine how Elzur in view of Butts would teach this recitation.

For all the above reasons, claim 28 is nonobvious over Elzur in view of Butts.

5.    Claim 30

Regarding claim 30, the Final Rejection states:

> As per claim 30, Elzur discloses the method of claim 28, wherein the packet is received via the port and the data is sent to the storage unit via the port (column 4, lines 43-45, column 6, lines 49-50, column 11, lines 28-30).

Applicants respectfully disagree. As discussed above regarding the rejection of claim 1, the only ports mentioned in the cited portions of Elzur are numbers found in transport layer headers of packets. Thus, the Final Rejection of claim 30 is essentially stating that Elzur discloses in "receiving the packet via a number in the transport layer header of the packet and sending the data from the packet to the storage unit via the number, thereby avoiding the computer." Such an interpretation doesn't make sense, yet the Final Rejection offers no other possible explanation of its allegation that Elzur discloses the above-quoted recitation of claim 30.

For at least this reason, claim 30 is nonobvious over Elzur in view of Butts.

6.    Claim 31

Regarding claim 31, the Final Rejection states:

> As per claim 31, Elzur discloses the method of claim 28, wherein the interface device includes first and second network ports, and the packet is received via the first port and the data is sent to the storage unit via the second port (column 4, lines 43-45, column 6, lines 49-50, column 11, lines 28-30).

Applicants respectfully disagree. As discussed above regarding the rejection of claim 1, the only ports mentioned in the cited portions of Elzur are numbers found in transport layer headers of packets. Thus, the Final Rejection of claim 31 is essentially stating that Elzur discloses in "receiving the packet via a number in the transport layer header of the packet and sending the data from the packet to the storage unit via another number, thereby avoiding the computer." Such an interpretation doesn't make sense, yet the Final Rejection offers no other possible explanation of its allegation that Elzur discloses the above-quoted recitation of claim 31.

For at least this reason, claim 31 is nonobvious over Elzur in view of Butts.

B.    Claims 2, 5, 22 and 25

Claims 2, 5, 22 and 25 stand rejected under 35 U.S.C. §103(a) as allegedly being obvious over Elzur in view of Butts in view of U.S. Patent No. 6,065,096 to Day et al. ("Day").

1.    Claims 2 and 22

Regarding claims 2 and 22, the Final Rejection states:

> As per claims 2 and 22, Elzur, in view of Butts, discloses the interface device of claims 1 and 21.
>
> Elzur, in view of Butts, does not explicitly disclose the interface further comprising a SCSI controller connectable to the storage unit.
>
> However, Day discloses SCSI interface channels attached to disk drives (column 2, lines 40-54, column 5, lines 1-25).
>
> Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate in Day's interface comprising a SCSI controller in Elzur's device in order to provide for a simple, lower cost RAID controller architecture to enable lower cost and complexity associated with high performance and high reliability storage subsystems.

As discussed above, applicants respectfully disagree with the Final Rejection assertion that "Elzur, in view of Butts, discloses the interface device of claims 1 and 21." Day does not change this situation.

Moreover, claim 2 recites: "The interface device of claim 1, further comprising a SCSI controller connectable to the storage unit." The "storage unit" is, however, not found in the Final Rejection of claim 1. Therefore, one of ordinary skill in the art would not have "found it obvious to implement or incorporate in Day's interface comprising a SCSI controller in Elzur's device" as alleged by the Final Rejection.

The rejection of claim 22 is similarly inapposite.


2.    Claims 5 and 25

Regarding claims 5 and 25, the Final Rejection states:

> As per claims 5 and 25, Elzur, in view of Butts, discloses the interface device of claims 1 and 21.
>
> Elzur, in view of Butts, does not explicitly disclose the interface further comprising a RAID controller connectable to the storage unit.
>
> However, Day discloses RAID interface channels attached to disk drives (column 2, lines 11-25, 55-67).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate in Day's interface comprising a RAID controller in Elzur's device allowing the disk interface connections and protocols to be more flexibly selected but at the cost of less integration within the circuit.

As discussed above, applicants respectfully disagree with the Final Rejection assertion that "Elzur, in view of Butts, discloses the interface device of claims 1 and 21." Day does not change this situation.

Moreover, claim 5 recites: "The interface device of claim 1, further comprising a RAID controller connectable to the storage unit." The "storage unit" is, however, not found in the Final Rejection of claim 1. Therefore, one of ordinary skill in the art would not have "found it obvious to implement or incorporate in Day's interface comprising a RAID controller in Elzur's device" as alleged by the Final Rejection.

The rejection of claim 25 is similarly inapposite.


C.      Claim 3

Claim 3 stands rejected under 35 U.S.C. §103(a) as allegedly being obvious over Elzur in view of Butts in view of U.S. Patent No. 6,172,981 to Cox et al. ("Cox"). In this regard, the Final Rejection states:

> As per claim 3, Elzur, in view of Butts, does not explicitly discloses the interface device of claim 1, wherein said first network port is connected to a first network and said second network port is connected to a second network.
> However, in an analogous art, Cox teaches a switch that provides connection between different networks. The switch transmits data bits received from the source port directly to the destination port. It reads the network layer protocol header in a data frame, and if destined for a station on a different LAN segment, it transmits to the destination end station (Abstract, column 1, lines 63-67, column 2, lines 1-5, 15-20, column 4, lines 3-8, column 5, lines 3-12).
> Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Cox's ports on first and second networks in Elzur's device avoiding and eliminating delays by forwarding of data without storing the entire frame.

Claim 3 recites: "The interface device of claim 1, wherein said first network port is connected to a first network and said second network port is connected to a second

network." As discussed above, however, neither the "first network port" nor the "second network port" is found in the Final Rejection of claim 1. Therefore, one of ordinary skill in the art would not have "found it obvious to implement or incorporate Cox's ports on first and second networks in Elzur's device" as alleged by the Final Rejection.

For at least these reasons, claim 3 is nonobvious over Elzur in view of Butts in view of Cox.

### D. Claims 6-7, 24, 26-27 and 32

Claims 6-7, 24, 26-27 and 32 stand rejected under 35 U.S.C. §103(a) as allegedly being obvious over Elzur in view of Butts in view of U.S. Patent No. 6,233,543 to Muller et al. ("Muller").

#### 1. Claim 6

Regarding claim 6, the Final Rejection states:

> As per claim 6, Elzur, in view of Butts, does not explicitly discloses the interface device of claim 1, further comprising a file cache adapted to store said data.
> However, the use and advantages for using such cache is well-known to one of ordinary skill in the art as evidenced by Muller (column 56, lines 20-30, column 58, lines 26-30).
> Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Muller's file cache in Elzur's device in order to store non-assembled packets.

Applicants respectfully disagree. Muller at "column 56, lines 20-30, column 58, lines 26-30" discloses a "descriptor cache" rather than a file cache.

For at least this reason, claim 6 is nonobvious over Elzur in view of Butts in view of Muller.

#### 2. Claim 7

Regarding claim 7, the Final Rejection states:

> As per claim 7, Elzur, in view of Butts, does not explicitly discloses further discloses the network interface device of claim 1, further comprising a file cache adapted to store said data under control of a file system in the host.

However, the use and advantages for using such cache is well-known to one of ordinary skill in the art as evidenced by Muller (column 56, lines 20-30, column 58, lines 26-30).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Muller's file cache in Elzur's device in order to store non-assembled packets.

Applicants respectfully disagree. Muller at column 56, lines 20-30, column 58, lines 26-30 discloses a "descriptor cache" rather than a file cache. Moreover, Muller does not disclose that the "descriptor cache" is under the control of a file system.

For at least these reasons, claim 7 is nonobvious over Elzur in view of Butts in view of Muller.

### 3. Claim 24

Regarding claim 24, the Final Rejection states:

As per claim 24, Elzur, in view of Butts, does not explicitly discloses the interface device of claim 21, further comprising a file cache adapted to store said data.

However, the use and advantages for using such cache is well-known to one of ordinary skill in the art as evidenced by Muller (column 56, lines 20-30, column 58, lines 26-30).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Muller's file cache in Elzur's device in order to store non-assembled packets.

Applicants respectfully disagree. Claim 24 instead recites: "The interface device of claim 21, further comprising a Fibre Channel controller connectable to the storage unit."

For at least this reason, the Final Rejection has not presented a *prima facie* case of obviousness of claim 24.

### 4. Claim 26

Regarding claim 26, the Final Rejection states:

As per claim 26, Elzur, in view of Butts, does not explicitly discloses the interface device of claim 21, further comprising a file cache adapted to store said data.

However, the use and advantages for using such cache is well-known to one of ordinary skill in the art as evidenced by Muller (column 56, lines 20-30, column 58, lines 26-30).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Muller's file cache in Elzur's device in order to store non-assembled packets.

Applicants respectfully disagree. Muller at "column 56, lines 20-30, column 58, lines 26-30" discloses a "descriptor cache" rather than a file cache.

For at least this reason, claim 26 is nonobvious over Elzur in view of Butts in view of Muller.

### 5.    Claim 27

Regarding claim 27, the Final Rejection states:

As per claim 27, Elzur, in view of Butts, does not explicitly discloses the network interface device of claim 21, further comprising a file cache adapted to store said data under control of a file system in the computer.

However, the use and advantages for using such cache is well-known to one of ordinary skill in the art as evidenced by Muller (column 56, lines 20-30, column 58, lines 26-30).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Muller's file cache in Elzur's device in order to store non-assembled packets.

Applicants respectfully disagree. Muller at "column 56, lines 20-30, column 58, lines 26-30" discloses a "descriptor cache" rather than a file cache. Moreover, Muller does not disclose that the "descriptor cache" is under the control of a file system.

For at least these reasons, claim 27 is nonobvious over Elzur in view of Butts in view of Muller.

### 6.    Claim 32

Regarding claim 32, the Final Rejection states:

As per claim 32, Elzur, in view of Butts, does not explicitly discloses the network interface device of claim 28, further comprising storing the data on a file cache of the interface device.

However, the use and advantages for using such cache is well-known to one of ordinary skill in the art as evidenced by Muller (column 56, lines 20-30, column 58, lines 26-30).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Muller's file cache in Elzur's device in order to store non-assembled packets.

Applicants respectfully disagree. Muller at "column 56, lines 20-30, column 58, lines 26-30" discloses a "descriptor cache" rather than a file cache. Moreover, Muller does not disclose storing the data on a file cache of the interface device.

For at least these reasons, claim 32 is nonobvious over Elzur in view of Butts in view of Muller.


## III.    Conclusion

As discussed above, applicants have amended several claims to correct an antecedent basis issue, and respectfully assert that all of the claims are nonobvious over the cited references. For the reasons discussed above, applicants respectfully submit that the claims are allowable, and a notice of allowance is solicited.

Respectfully submitted,

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